MMD-1 RD&D PERMIT
MODULE III - STORAGE IN THE MUNITIONS STORAGE MAGAZINE AND TREATMENT IN MISCELLANEOUS UNITS

III.A. APPLICABILITY

This module defines the requirements for storage and treatment of non-explosively configured chemical agent filled munitions and test items in the MMD-1. The following units are covered under this RD&D permit:

- **Munitions Storage Magazine (MSM)** - Portable storage unit used to store overpacked chemical warfare items (munitions and DOT cylinders) prior to treatment. In the event of a release air flow from the MSM is routed through a carbon filter system before venting to the atmosphere.

- **Unpack Area (UPA)** - Area where chemical warfare items (munitions and DOT cylinders) are removed from overpack storage containers, checked for vapor leaks and attached to a fixture. The fixture allows the items to be placed in the MTV. Drained, decontaminated items removed from the MTV are cut up and bead blasted in the UPA. All air flow from the UPA is routed through two carbon filter systems before venting to the atmosphere.

- **MMD-1**
  Viking Analytical Equipment - gas chromatography and mass spectrometer equipment used to verify the content of the munitions
  Munitions Treatment Vessel (MTV) - This unit opens the munition drains the chemical agent and washes the agent out of the munition with a high-pressure spray of decontamination solution.
  Liquid Treatment Vessel (LRV) - This unit is used to mix chemical agent with decontamination solution thereby reducing the toxicity of the chemical agent.
  Reagent Storage Tanks - Tanks that store the reagent used to treat the chemical agent. Reagent is fed from the tanks to the MTV and LRV. The reagent tanks will not be used to store or treat waste.
  Surge Tanks - Tanks used to store treated waste. If necessary, decontamination solution can be added to the surge tanks for additional treatment.
  Gas Treatment System - This system is designed to remove contamination from the gases and vapors generated in the treatment unit. The system consists of a cooler, water vapor control unit, carbon impregnated sodium hydroxide unit, two carbon canisters, a carbon filter system and the Building 3445 carbon filter system.

III.B. PERMITTED WASTE

III.B.1. The Permittee may treat the amounts and types of P999 and P095 hazardous waste filled munitions and items listed below. A more complete list of items to be treated is

included in Attachment 4. In addition to or as part of the P999 and P095 waste component, the wastes treated may contain hazardous waste listed in R315-2-9(g). The Permittee shall provide for proper analysis of wastes generated during treatment based on information in the waste analysis plan (Attachment 4).

Agent	Total Agent	Total Items	General Munition Types
H, HD	300 pounds	17	4.2 inch mortar or equivalent cylinder M47 or equivalent cylinder Other cylinders simulating munition types
GB	150 pounds	47	4.2-inch mortar or equivalent cylinder Stokes mortar or equivalent cylinder Other cylinders simulating munition types M139and equivalent cylinder 155 mm or equivalent cylinder
VX	225 pounds	28	155 mm or equivalent cylinder 8 inch projectile or equivalent cylinder Other cylinders simulating munition types
CG	1,000 pounds	15	155 mm projectile or equivalent DOT cylinder M78 or equivalent DOT cylinder DOT cylinders (various sizes)

III B.2 The MSM and UPA are permitted to receive P095 and P999 waste from Igloo G at Dugway or from other sources prior to treatment. If wastes are received from off site, Dugway must comply with all applicable manifest and waste tracking requirements of R315. All chemical agent filled items received for storage in the MSM are hazardous waste.

III.C. OPERATING REQUIREMENTS

III.C.1 The Permittee shall operate the MMD-1 at the Carr Facility and shall use controls, operating practices and operate within the standard operating procedures (SOPs) and process limits described in Attachment 11 and other parts of this permit.

III.C.2 In the event of an equipment or power failure or other emergency, the Permittee shall not add wastes to the system and shall cease operations, and if possible, shall remove all wastes from the system. The Permittee shall also cut off air flow from the gas processing system to the Building 3445 carbon filters as soon as safe and practicable after an equipment or power failure or other emergency.

III.C.3 The Permittee shall repair any equipment that leaks or has caused a spill. Any such unit that can't be repaired or replaced must be closed.

III.C.4 The Permittee shall monitor waste storage and treatment operations as required in Attachments 10 and 11.

III.C.5 All wastes shall be treated until chemical agent reaches a treatment level of fifty (50) milligrams per liter (mg/l) or less in the treatment residue. The Permittee shall document in the operating record efforts taken to reach the treatment goal of (1) one mg/l chemical agent in the waste residues. The Permittee will treat the waste consistent with the time ranges in Attachment 2, Table 8-5.

III.C.6 If the Permittee cannot meet the treatment level specified in Condition III.C.5, the Permittee shall contact the Executive Secretary for approval prior to treating other waste or sending the waste off site. The Permittee shall cease waste treatment until an alternate treatment method or treatment level is approved by the Executive Secretary.

III.C.6.a If chemical agent remains in a processed munition body above the air monitoring levels specified in Attachments 10 and 11, and subsequent treatment in the MTV fails to meet the required levels, the munition body shall be removed from the MTV, placed in a container filled with appropriate decontamination solution and shall be sent to Igloo G at Dugway for storage.

III.C.7. The Permittee shall maintain secondary containment of the maximum volume of liquid which will be in the system as each batch of agent is treated in the MMD-1.

III.C.8. The Permittee may treat at a rate not to exceed 4 items (munitions or DOT cylinders) per day.

III.C.9. The carbon air filter systems shall be maintained in good working order. If there is any malfunction in any carbon air filter system or the carbon air filter chemical agent monitors, no additional chemical filled munitions shall be placed into the MMD-1 until all the carbon air filter equipment and carbon air filter chemical agent monitors are fully functional.

III.C.10. The Building 3445 carbon filter unit shall be on line at all times from the time that any chemical agent is introduced into the MMD-1 until all equipment has been decontaminated and closed in accordance with Condition II.K, except during carbon air filter replacement.

III.C.10.a. The activated carbon air filtration system filter units listed in the Environmental Monitoring Plan shall be monitored for operation and for the presence of chemical agent (H, HD, GB, VX and CG) during operations or when waste is present in the system as required in Attachment 10.

III.C.11. If chemical agent or industrial chemical breaks through a carbon filter element, the element must be replaced. The carbon filter element shall be replaced with a new filter element and installation of the new filter shall be verified by the MMD-1 supervisor for agent operations prior to placing the air filter system back into service. All filter bank replacements shall be documented in the operating record. Corrective actions shall be

initiated by any of the following alarms in the filter midbed: (1) detection of mustard (H and HD), GB or VX at 0.2 TWA or greater; or (2) detection of CG or any industrial chemical. DAAMS tubes will be pulled from the filter midbed and analyzed. If the confirmation DAAMS tubes are from the Building 3445 filter system, all personnel at the site shall be masked until DAAMS analysis is complete and appropriate corrective action is taken. MINICAMS and DAAMS shall monitor the filter exhaust. For any release, all DAAMS tubes collected from the filter exhaust shall be analyzed. Treatment operations in progress will be continued to completion. If the presence of agent or industrial chemical is confirmed, treatment operations in progress will be brought to a safe stop if the process cannot be completed. Operations will resume after the filter elements have been changed. Loss of air or vapor monitoring capabilities at any carbon filter midbed location will result in operations being brought to a safe shutdown until the monitoring capabilities are restored.

III.C.12. Any release or possible release of chemical agent from the Building 3445 air filtration system to the atmosphere is considered a potential endangerment to human health and the environment. Failure to halt operations during emergencies, maintain proper monitors, or other operations inconsistent with this permit that may allow chemical agent to escape the Building 3445 carbon filter system and may result in a possible release of chemical agent to the environment are considered violations of this permit.

III.C.13. A second carbon air filter exhaust fan shall be maintained as a backup unit. If a backup fan is unavailable, the MMD-1 shall be placed into standby mode. No additional waste shall be added to the system until at least one carbon filter element is operational and the backup fan is returned to good working order.

III.C.14 In addition to the operating requirements of this permit, the MMD-1 shall be operated in compliance with all applicable safety and other Army requirements (e.g., AR 385-61 and DAPAM AR 385-61).

III.C.15 The Permittee shall operate the MMD-1 as outlined in standard operating procedures (SOP) BC000-M-175 Monitoring and Sampling Vapor, BC-0000-M-600 Post Campaign Cleanout, BC-0000-M-610 for Post-Mission MTV Cleanout, BC-0000-M-860 Other than Normal Operations, and BC-0000-M-800.

III.C.15.a The Permittee will provide, prior to operation, for approval by the Executive Secretary the following documents, information and revisions:

i. Attachment 11, Section 5.5.4 revised to describe drilling of CWM
ii. Attachment 11, Table 5-11 revised for consistency with Attachment 10
iii. Attachment 3, Union Carbide GC-FID method for analysis of monoethanolamine (MEA).
iv. Attachment 11, Section 5.7.5, description of corrective actions that will be taken for manual shut offs.
v. Attachment 11, revisions needed to describe: 1) phosgene processing, 2) removal of the reagent tank and 3) system redesign and piping location changes
vi. Carbon filter breakthrough calculations for the Building 3445 carbon filter system.
vii. Attachment 3, Appendix B, Section 6, clarify the MEA to water ratio that will be used for GB.
viii. Attachment 11, Figures 13-15 including the information identified in Army comments 38-42 dated 28 January 1999.

III.C.16 The Permittee shall operate the MMD-1 consistent with and as described in Attachment 11, Appendix E, MMD-1 Alarms, Interlocks and Other Safety Controls.

III.C.17. Before processing each type of chemical agent (i.e., each agent campaign), the Permittee shall decontaminate the MMD-1 system.

III.D OFFSITE WASTE MANAGEMENT CONTROLS

III.D.1. All liquid hazardous waste generated as a result of operations by the MMD-1 treatment system shall be sent offsite for treatment by a permitted hazardous waste incinerator. Non-incineration alternatives may also be considered for treatment of this waste stream based on available treatment capacity and U.S. Amy and Executive secretary approval. Liquids meeting the treatment goal of 50 mg/l chemical agent will be considered acutely toxic and will be assigned the State of Utah hazardous waste code F999.

III.D.2 All hazardous waste generated as a result of operations by the MMD-1 shall be placed in DOT certified containers that meet the requirements of R315-8-22.

III.D.3 All hazardous waste generated as a result of operations by the MMD-1 shall be compatible with containers used for storage and transportation.

III.D.4. Transporter Requirements. The Permittee shall enter into a contract with a hazardous waste transporter requiring:

III.D.4.a In the event of release of material listed in R315-2-10(e)(1) or R315-2-11(e)(1) from the containers of hazardous waste resulting from operations by the MMD-1 during transportation to the permitted hazardous waste incinerator, the transporter shall respond in accordance with 49 CFR 172 Subpart G and 29 CFR 1910.120 (g) and (q), and shall verbally notify the Dugway Proving Ground within 24 hours of the initial release.

III.D.4.b Condition III.D.3.d.i shall be defined in the government contract with the hazardous waste transporter as a provision allowing for termination by default pursuant to the Federal Acquisition Regulation (FAR) 52.249-8(a)(iii) or other clause as applicable. Failure by the hazardous waste transporter to meet this condition of the contract shall result in the following actions by the Permittee:

i. Verbal notification to the Utah Department of Environmental Quality of the failure to meet this condition;

ii. Immediate recommendation to the Contracting Officer for termination of the contract;

iii. In the event of contract termination, the recovery and placement into permitted storage of any P999 or F999 hazardous waste and spill residue from operations of then MMD-1 still under the control of the transporter at the time of contract termination; and

iv. In the event of contract termination, entering into a contract with another hazardous waste transporter for supplies or services similar to those terminated.

III.D.5. Incinerator Requirements. The Permittee shall enter into a contract with a permitted hazardous waste incinerator requiring:

III.D.5.a Prior to treatment, personnel of the permitted hazardous waste incinerator shall keep the containers of P999 and F999 hazardous waste resulting from operations by the MMD-1 closed at all times while such containers are under the control of the permitted hazardous waste incinerator.

III.D.5.b. If one or more profile samples are required by the permitted hazardous waste incinerator, those samples shall be collected only at Dugway by personnel from the permitted hazardous waste incinerator or by the Permittee. Wastes released to any off site laboratory for verification (fingerprint) or other analysis shall be accompanied by documentation showing the waste meets the treatment level specified in Condition III.C.5. The documentation shall clearly and prominently indicate the concentration of chemical agent contained in the sample and the detection limit for each sample.

III.D.5.c. The permitted hazardous waste incinerator shall treat the containers of P999 and F999 hazardous waste resulting from operations by the MMD-1 as soon as possible, not to exceed 60 days from the time of waste pickup from Dugway.

III.D.5.d The permitted hazardous waste incinerator shall not commingle P999 and F999 hazardous waste resulting from operations by the MMD-1 with other hazardous waste except as required to facilitate incineration (e.g., fuel blending).

III.D.5.e For each shipment of P999 and F999 hazardous waste received at the permitted hazardous waste incinerator, a representative of the permitted hazardous waste incinerator shall notify the Permittee for confirmation of receipt for each shipment. Such notification shall occur as soon as possible, but not later than two business days after receipt of a shipment. The permitted hazardous waste incinerator shall provide a certificate of destruction for each container of P999 and F999 hazardous waste received and treated at the permitted hazardous waste incinerator.

III.D.5.f. In the event of a release of material listed in R315-2-11(e)(1) or R315-2-10(e)(1) from the containers of hazardous waste resulting from operations by the MMD-1 during treatment at the permitted hazardous waste incinerator, the personnel at the permitted hazardous waste incinerator shall respond in accordance with 29 CFR 1910.120 (g) and (q), and shall verbally notify Dugway within 24 hours of the initial release.

III.D.5.g Conditions of III.D.5.a through III.D.5.g shall be defined in the government contract with the permitted hazardous waste incinerator as provisions allowing for termination by default pursuant to FAR 52.249-8(a)(iii) or other clause as applicable. Failure by the permitted hazardous waste incinerator to meet the conditions of this contract shall result in the following actions by the Permittee:

i. Verbal notification to the Utah Department of Environmental Quality of the failure;

ii. Recommendation to the Contracting Officer for contract termination;

iii. In the event of contract termination, the recovery and placement into permitted storage of any untreated P999 and F999 hazardous waste and containers from operations of the MMD-1still present at the incinerator at the time of contract termination; and

iv. In the event of contract termination, entering into a contract with another permitted hazardous waste incinerator for supplies or services similar to those terminated.

III.D.6 As a measure of quality assurance for offsite hazardous waste management, the Permittee shall perform the following:

III.D.6.a Conduct an audit of the permitted hazardous waste incinerator receiving the P999 and F999 hazardous waste resulting from operations by the MMD-1 initially upon contract award, at the time P999 and F999 hazardous waste is first treated, and every six months thereafter during the duration of the contract and extensions thereof. Each audit shall consider waste management operations, including the incinerators operating records, incinerator operating parameters including fuels blending, verification of waste destruction and the quality assurance program.

III.D.6.a.i Provide the Utah Department of Environmental Quality with a written report of the permitted hazardous waste incinerator audit within 30 days upon completion of the audit.

III.D.7. Analytical Laboratory Requirements For samples of P999 and F999 hazardous waste generated by the MMD-1 sent offsite for RCRA analysis, the Permittee shall enter into a contract with the analytical laboratory requiring, at a minimum:

III.D.7.a. In the event of a release of material listed in R315-2-11(e)(1) or R315-2-10(e)(1) from the containers of hazardous waste resulting from operations by the MMD-1 during analysis at the analytical laboratory, the personnel at the analytical laboratory shall respond in accordance with 29 CFR 1910.120 (g) and (q), and shall orally notify the Dugway within 24 hours of the initial release.

III.D.7.b The Permittee shall provide a certification statement with the manifest accompanying the waste or the chain-of-custody form accompanying each laboratory sample. The statement shall certify that each laboratory sample contains less than 50 mg/l chemical agent and shall provide the measured analytical value of chemical agent present.

III.D.7.c The Permittee shall provide a safety briefing for the analytical laboratory personnel, including symptoms of chemical agent exposure treatment methodology.

III.D.7.d Conditions of III.D.7.a through III.D.7.d shall be defined in the government contract with the analytical laboratory as provisions allowing for termination by default pursuant to FAR 52.249-8(a)(iii) or other clause as applicable. Failure by the analytical laboratory to meet the conditions of this contract shall result in the following actions by the Permittee:

i. Verbal notification to the Utah Department of Environmental Quality of the failure;

ii. Recommendation to the Contracting Officer for contract termination;

iii. In the event of contract termination, the recovery and placement into permitted storage of any untreated P999/F999 samples from operations of the MMD-1 still present at the analytical laboratory at the time of contract termination; and

iv. In the event of contract termination, entering into a contract with another analytical laboratory for supplies or services similar to those terminated.

III.E. CONTAINMENT SYSTEMS

III.E.1 The Permittee shall maintain and operate all containment systems as outlined in Attachment 11 and as shown in the drawings referenced in Condition III.E.2.

III.E.2 All engineering and design drawings submitted with the application for this permit are incorporated into this permit by reference. Copies of the drawings shall be maintained at the facility. Attachment 11, Appendix A lists the engineering drawings.

III.F. SPECIAL REQUIREMENTS FOR IGNITABLE OR REACTIVE WASTE

The Permittee shall take precautions to prevent accidental ignition or reaction of ignitable or reactive waste and follow the procedures specified in Attachments 7 and 11 and R315-8-2.8(a).

III.G. OPERATING RECORD

III.G.1 The Permittee shall keep an operating record showing the number and type of each item stored or treated in any unit listed in Condition III.A.

III.G.2 The Permittee shall record in the operating record all instances where wastes are removed from the treatment process prior to complete treatment in the MMD-1. All wastes removed from the process shall be managed as described in Attachment 10 and Condition III.C.6.a. The operating record shall show the number and type of item removed and all locations where the items are treated or stored.

III.G.3 The operating record shall track operating days consistent with Condition I.H.

III.H. MAINTENANCE OF THE HAZARDOUS WASTE MANAGEMENT UNITS

The Permittee shall maintain the treatment units and associated equipment consistent with the details in Attachment 11 and drawings referenced in Condition III.E.2.

III.I. INSPECTION SCHEDULES AND PROCEDURES

III.I.1. The Permittee shall inspect the storage and treatment units once each operating day, and as specified in Attachment 5. The purpose of this inspection shall be to detect equipment deterioration or other defects that may cause process or monitoring equipment to malfunction during waste storage or treatment.

III.I.2. If problems are observed during inspections, the Permittee must correct the problem as specified in R315-8-2.6(c) and (d).

III.J. RECORD KEEPING

The Permittee shall place the results of all analytical results, measurements and any other documentation showing compliance with R315-8-9.8 and R315-8-2.8(b)in the facility operating record.

III.K. CLOSURE

At closure the Permittee shall remove all hazardous waste and hazardous waste residues from each unit in accordance with the procedures in R315-8-7 and Attachment 9.

III.K.1 In addition to the closure standards in this permit, the MMD-1 shall be closed to meet all Army requirements (i.e., XXX) for reuse of equipment used in chemical agent operations as outlined in DA PAM AR 385-61.

III.L. RISK ASSESSMENT

III.L.1 An assessment of risk associated with wastes generated by the MMD-1 is included in Attachment 1, Sections 9.5, 9.11 and 9.12 and items 14 and 31 of the administrative record. Item 31 of the administrative record is incorporated into this permit by reference. Conditions III.D.1 through III.D.7 address risk to off-site managers of MMD-1 waste.